International Medical Congress

SPECIMEN

OF

REPRODUCTION OF THE HIP-JOINT AFTER EXSECTION,

IN A CASE COMPLICATED WITH

POTT'S DISEASE AND ALBUMINURIA:

WITH

A SYNOPSIS OF THE RESULTS IN SEVENTY-ONE CASES OF EXSECTION OF THE HIP-JOINT

BY

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The patient, a little girl, first came under the care of Professor Sayre, at the age of 2 years and 9 months. The disease, which commenced spontaneously, was then of about nine months' standing, an abscess having opened about one month before admission.

The child was very small for her age, being apparently not above 18 months old, she was very emaciated, and the abdomen was much distended. When placed in the recumbent position, the left lower extremity was slightly flexed, rotated inwards, and adducted, so that it crossed the limb of the opposite side. Two months after admission the left hip-joint was excised. The head and neck of the femur and part of the great trochanter were found to have been absorbed, and the acetabulum was perforated. The upper extremity of the femur was sawn off opposite the trochanter minor. Three small pieces of dead bone were prised off the acetabulum. The wound was washed out with carbolic lotion, dressed with oakum and balsam of Peru, and wire breeches applied.

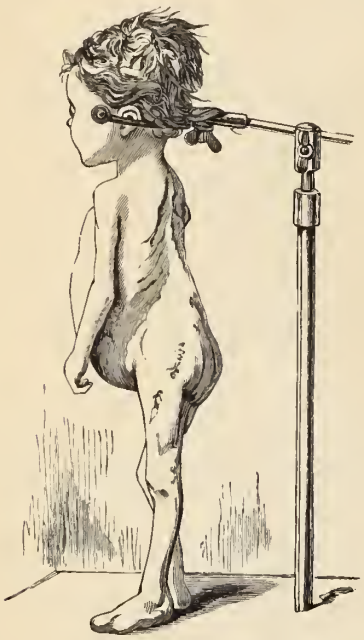
The child progressed favourably with the exception of occasional elevations of temperature and a slight attack of bronchitis. At the end of a month, the excision wound had closed but a sinus behind still remained open. Six weeks later, this sinus was still open, but there was little discharge, and the child was much improved in every respect. Dr. Sayre's side splint was applied.

Seven weeks after operation, the patient could sit up in a chair.

Six months after the operation, the posterior sinus still remained open, but the patient was much improved in general condition, the splint was discontinued, and passive movements were made daily. The diseased limb was at least a quarter of an inch longer than the sound one. Six weeks later, an abscess formed, and was opened, and after this time Dr. Sayre saw no more of the case until two years and two months after the operation.

She then came again under his care, with an enormous waxy liver, and in a hopeless condition. The limb was slightly flexed and adducted, and one sinus existed over the left hip, from which pus escaped. She suffered no pain, but remained quietly in bed, the urine and fæces were passed involuntarily. She

lingered on for four months, when it was noticed that there was a very sharp prominence over the spinous processes in the dorsal region, and one also in the lumbar region. The breathing became rapid and laboured; and steadily sinking the child died three years and six months after the operation.



Showing position of limbs after death.

On post-mortem examination, the organs were, as was diagnosed during life, in a waxy condition, and traces of old tubercular disease were found in the lungs.

After death, a photograph, from which the accompanying woodcut was obtained was taken by Mr. Mason, of Bellevue Hospital, by simply suspending her in a head rest. It will be observed that the limbs are nearly normal in position, and they assumed this position by their own gravity, without any extension or traction being applied to them. The limb operated upon is, in fact, the straighter of the two, and is not so much flexed at either hip or knee as the other. A sharp angular projection is distinct over the third dorsal, and another not so prominent over the first lumbar vertebra; the enormous abdomen is markedly conspicuous.

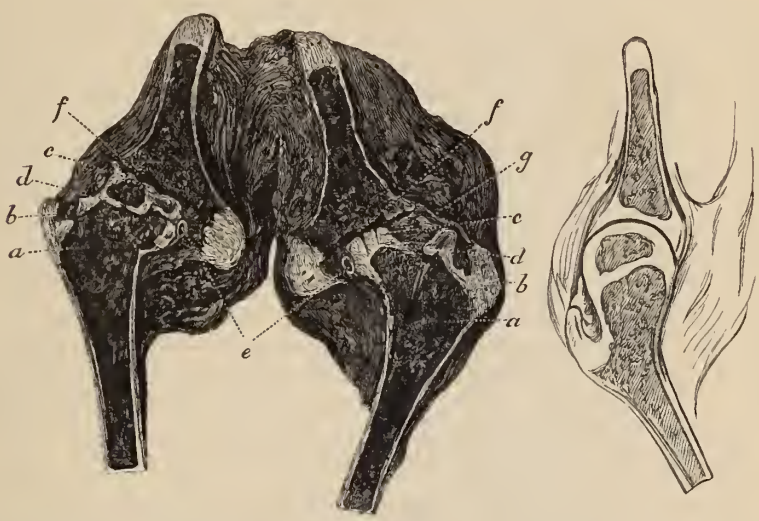
Length of body, 30 inches; left lower extremity 13 inches from anterior superior spine of ilium to external malleolus, right limb $13\frac{1}{8}$ inches long between same points. Length of both limbs from trochanter major to external malleolus $13\frac{1}{8}$ inches (these measurements were made by Professor Stephen Smith).

Circumference of body over umbilicus, 40 inches; over false ribs, 20 inches. A sharp, angular projection observed over third dorsal vertebra, and another not quite so prominent over first lumbar. Over left hip exists the line of an incision, 2 inches in length, all healed except a minute opening at its upper part. A second cicatrix, one and a half inch long, on the outer surface of the thigh. Behind is a third incision, which discharges a drop or two of serum on being squeezed. As the body is placed on its back, the left limb becomes straight, and movements at the hip-joint can be made.

Spinal column, pelvis, and upper half of both femurs removed *en masse*. Left hip covered by a thick mass of fat. A transverse section of left hip made through joint. Upper end of femur found to rest in old acetabulum, and to be united to it by a mass of vascular and apparently fibrous tissue, which admits of considerable movement. A probe can be passed from the posterior sinus down to this mass. This is the only sinus left, no carious bone found.

The specimen was immediately sent to Dr. Heitzmann for examination, who made a very accurate drawing of both hips, from which the photograph seen above was taken; and also a minute microscopic examination of the newly-formed hip, by which it will be seen that not only was the bone reproduced very nearly in

form and size as well as length of the opposite one ; but also, that true articular cartilage had been newly formed, and the motions of the joint were quite free.



aa, newly formed head and neck of thigh-bone. Right coxa, cut open, normal.
bb, newly formed trochanter.
cc, newly formed articular cartilage (proved by microscopic examination).
dd, newly formed diaphysal cartilage (proved by microscopic examination).
e, only sinus left, permeable for a small probe leading to no dead bone.
ff, loose connective tissue, uniting the head with femur, allowing some motion.
g, Newly formed firm capsule.

The lesson to be learned by this specimen is, that if Nature can produce such good results under such unfavourable circumstances, and in such a depraved constitution, that we certainly are justified in performing the operation under more favourable conditions.

Synopsis of 71 cases of exsection of hip-joint for morbus coxarius :—

Up to 10 years of age	45
From 10 to 20	19
Over 20	2
Unrecorded	5
	71

of which 46 were males and 25 females.

Forty-seven cases are now living with more or less useful limbs, and twenty-four are dead.

Of the twenty-four cases that died, nine had recovered from the operation some time previously to death, which was caused in each case by some other disease foreign to the operation.

Of the fifteen remaining, four died from acute intercurrent diseases, such as tetanus, double pneumonia, dysentery, and sunstroke, this leaves but eleven, which have died from the exhausting effects of hip disease without some intercurrent complication.

DISCUSSION.

Mr. John Croft, London: I regret that, owing to want of time, I cannot dwell upon the interesting papers of the preceding speakers. I would define as "late excision" an operation performed on a wasted exhausted patient, about whose diseased joint are old-established sinuses, and signs of displaced bones. Two points bearing on the motives for relatively early excision are, the frequent presence of sequestra in joints, and the frequency of tubercular disease. It is a known fact that many patients suffering from chronic articular disease, and presumably tubercular disease, get well without any operative interference. I would direct attention to the interesting fact that the statistics contained in the Report of the Clinical Society's Committee on Hip-joint Disease show a saving of one year on the average duration of disease, when treated by excision. I express my confident expectation that the rate of mortality after excision of joints will steadily diminish as improvements are established in the methods of operating, and of after-treatment. Seven out of thirty-three cases of hip-joint disease, cured in the first stage, presented $3\frac{1}{4}$ inches shortening, or as much as ordinarily occurred after excision; and I look upon the objection raised against excision—that it causes shortening—as a trivial one. Time prevents me from referring to any of the other interesting questions contained in the papers which have been read.

Mr. Howard Marsh, London: The soundness of the proverb that "Prevention is better than cure" is daily becoming more clear in the field of medical science. It is possible that we may one day be able to meet typhus and typhoid fever by a direct antidote; but the great probability is, that the true method of dealing with these diseases is by prevention. The same is true in surgery. We must prevent disease when we can; and when we cannot prevent, we must, for the next principle—as we saw yesterday in the discussion on lithotrity—aim at applying treatment in the early stages of disease. Many large and formidable operations, involving considerable risk to life, are now in use because we are called upon to treat cases that have reached so advanced a stage that nothing but some radical proceeding is sufficient. This is notably the case in diseases of the joints. In former times amputation was the only resource within the surgeon's reach. But at length Sir William Fergusson, developing the principle of conservative surgery, which was his constant guide, and of which he became so great a master, substituted excisions for amputations—that is, he cut out the affected joint, and so saved the limb. This, however, is only a link in the chain of progress, and when we are considering, in our turn, what is the next step to take, we are, I think, called upon to remember what excision really is. It belongs to the same class of treatment as amputation, for in both cases we give up the attempt to cure the disease Instead of this, we cut away the part in which the disease is placed. To excise a knee-joint is the same form of practice as to excise an eye or a testis; but in the case of these latter organs the great progress made in recent years lies in this: that we have learned how to save them by curing the diseases by which they are attacked. And when we find ourselves discussing the comparative value of early and late excisions of the joints, are we not bound to follow the parallel I have drawn, and ask how we could, at the present day, seriously discuss the question of late or early excision of the eye, or the testis—that is, their removal for incipient disease? Surely, to work in this direction would be to turn the dial of progress many degrees backward. And I feel some difficulty in speaking to this question,

for we must answer it differently, from different points of view. No doubt, as to mere healing of the wound, early excision will give a better result than late excision. But as regards the future condition of the patient, we must remember that, by taking this short cut to what we call his cure, we deprive him of one of the most important organs of his body. I cannot think that surgery has reached its final stage when, instead of attempting to cure incipient disease, we are invited to adopt the simple expedient of cutting out the affected part. For let us bear in mind that these cases, if treated while they are incipient (that is, in the stage in which it is now proposed to cut them out) are certainly curable. Many are cured every year in hospital practice, while in private practice excision is almost unknown. Our true course, I believe is, first, to let it be known that these cases are curable, if only we can get them in their early stage; and, secondly, to point out the necessity for extended hospital accommodation, which will allow us to treat the children of the poor, as we do those of the rich, by rest and good apparatus. When these objects can be obtained, surgery in this department will be, as it is becoming in others, not a mere mechanical art, by which parts are cut out, but a science engaged in cultivating a knowledge of disease, and of its cure by the gentlest means, and with the least possible sacrifice of, or interference with, the structures in which the disease is placed.

Mr. T. P. Teale, Leeds: I had intended to write a paper on the arrest of incipient joint disease by subcutaneous incision of the capsule, but have been unable to accomplish it. In respect to hospital patients we rarely face the question of treatment until considerable damage to joint structures has taken place—they continue for a time out-patients, or they are put under a period of rest and splints in hospital. It is probably during these periods that surgical attempts to relieve joint distress will be of most avail, and will render effective the necessary adjuncts of "rest," whether by subcutaneous drainage of serous effusion, or external drainage of pus, or even, as has been already done by some surgeons, actual boring into congested distressed bony structures contiguous to the joint cavity.

Mr. Frederick Treves, London: I would approach the present subject from a standpoint somewhat neglected in the discussion—viz., from a pathological point of view. There are two questions to be asked on this subject: 1. Is the process in strumous joints and bone disease tubercular? If tubercular, what significance does one attach to that term? In the first place there is now no doubt that the process in white swellings and strumous bone disease is decidedly tubercular. Microscopic research and experimental inoculation have proved this. If this be the case what is the clinical indication? Many assert that if the process is tubercular the diseased part must be removed at once, because the process is sure to extend, and in time to end probably in phthisis or some fatal tubercular disease. This argument in favour of early excision is ill-founded. These patient do not die of tubercular disease except in a few cases. M. Keiner, in *L'Union Médicale*, refers to eighty-one cases of strumous bone and joint disease whose future was known, of the number only six died of tuberculosis. The process in these joint affections may undergo spontaneous cure, but that cure is not apt to take place except under the most favourable circumstances. In the case, therefore, of the rich, and in those who can be placed under like favourable circumstances to the rich, the expectant treatment appears to be indicated; but in the poor, in those whose hygienic surroundings are bad, who cannot undergo long treatment,

it would appear well, in marked cases, to remove the disease, and, what is more, to remove it freely and at once.

Professor Redfern, Belfast: I am glad of the opportunity of inquiring if any member of the Section can explain why changes induced in cartilage tend to heal, whilst diseased actions in bones and synovial membranes so frequently extend and destroy the joint or the life. I have shown that incisions in articular cartilages in animals heal by the production of fibrous tissue, that cicatrices of fibrous tissue are common in the cartilages of the joints of man, that healing takes place after the destruction of portions of the articular cartilages of animals by caustics or cautery. Yet articular cartilages may disappear rapidly in inflamed joints, and the costal cartilages are very rapidly converted into a connective-tissue mass at parts which have been injured by setons or ligatures. In healthy animals I have failed to excite disease in the articular ends of bones or their cartilages by passing wires through the bone close to the cartilage, and keeping them in for months.

Mr. J. K. Barton, Dublin: The whole subject of excision of joints is a wide one; and may be broadly divided into those of the upper or lower extremities; the former are nearly out of the line of criticism, it being generally admitted that in the case of the shoulder, elbow, or wrist, excision should be the rule. It is to the joints of the lower extremity that to-day's discussion has exclusively referred, and no doubt for the reason that here lie our real difficulties; and it is especially to the hip-joint that reference has been made; and it is to this subject that I am about to address my observations. It has occurred to me to perform excision of the hip in seven cases during the past few years. I have followed all of these cases to their termination, and have the disheartening statement to make, that six are dead, and one alone is really completely successful. This result does not condemn the operation, for upon a closer examination we find that two lived for four years, and others for from one to two; one died from extension of the disease to the shaft of the femur, necessitating amputation. The first case, a child, five years of age, recovered so as to go to school, walking a mile and a half daily, and lived in good health for four years, then, after exposure to cold, became dropsical, and died comatose, from amyloid disease of the kidneys, which had been established before the operation. The specimen of the resected hip in this case is now on view in the Congress Museum; it is numbered 517.* It shows a perfect fibrous union between the acetabulum and the cut femur, and shows no sign of return of the disease. The second case has made a complete recovery, the lad, eleven years old at the time of the operation, is now a clerk in an office. As will be seen by these photographs he possesses a perfect support on the side operated upon, as also complete motion, flexion, and extension being perfect. I think the conclusion which we are compelled to come to regarding the time when excision of the hip should be performed, is, that it must be, as Mr. Croft has said, relatively early, that is, after the case has passed its early stage, in which a good result may be obtained by rest, extension, and general treatment, and before the degenerative disease of the kidneys and liver has advanced so far as to render the ultimate restoration of the patient to health impossible.

Professor Küster, Berlin: I wish to draw attention to the fact that the question

* It has been presented to the Royal College of Surgeons in Ireland, where the specimen may be examined.

of early as opposed to late excision of tuberculous joints cannot receive a simple answer, as this must vary with the particular joint in question. In children, resection of the knee is rarely called for, still less often are those of the feet or upper extremity; but with them the subject of hip-joint excision is the most important. These cases may be arranged in three groups: the first are advanced ones, in which the joint is completely disorganized, and the operation is undertaken with the endeavour to obtain a more useful limb. The second group are those in which the head of the bone has been partly destroyed, but is covered with a cicatricial layer, which has also occupied the portion of the synovial membrane; but the process has lighted up again at some point or other in the bone or the joint; these cases sometimes, but not always, yield a speedy cure. In the third group are the more acute cases, in which I myself have seldom obtained a rapid cure, or one without remaining sinuses. The deduction may seem to be that early excision should be eschewed in all cases; but if that is true, we should condemn a number of children to death or to prolonged suffering. I may lay down the following indication for operation with an easy conscience, as the results of operation are, as far as function is concerned, at least tolerable, and the sinuses eventually do, as a rule, heal:—viz., that excision of the hip should be performed when the general health begins to give way; but, as long as it is well maintained, the surgeon is likely to obtain a more useful limb by waiting.

Mr. T. Bryant, London: I have been induced to address the Section by listening to the record of Dr. Sayre's interesting case of restoration of the hip-joint after resection; for I have at the present time, in Guy's Hospital, a case which, I believe, illustrates an equal, if not a greater, amount of repair after operation. It occurred in the person of a little girl, aged six, who was admitted under my care at Guy's, in the autumn of 1880, with an acute periosteal abscess about the right femur, and all the constitutional disturbance which is well known to accompany this affection. It was treated at once by free incisions, the evacuation of the pent-up fluid, and subsequent washing out of the abscess cavity with a lotion of iodine and water. Great benefit followed these measures; but the upper two-thirds of the bone became necrotic, and no attempt was made by Nature to reform the bone, except at the junction of its middle with the lower third, where there was an ensheathing periosteal formation of about an inch in length. In the course of a few months the dead bone was removed, and the head, neck, trochanters, and two and a half inches of the shaft of the femur were taken away; the wound was washed out with iodine water, and dressed with terebene and oil (1 part to 4), and the limb was fixed to my double extension splint. In three weeks the operation wound had healed, and in three months new bone had taken the place of that which had been removed, and in another three months every movement of the joint was restored almost to perfection—that is, the limb could be flexed, adducted, abducted, and rotated with perfect freedom, and the general out line of the hip-joint was almost restored, the only difference being that the affected limb was almost one inch shorter than the sound. I will not venture to speculate upon the way in which this large portion of the femur and joint has been restored. That it has been restored in a wonderful way there is no doubt, and I am disposed to think that the good result has been brought about by the effusion of plastic matter from the ensheathing periosteal formation which covered the lower end of the sequestrum—for it was at this spot alone that any periosteal formation was to be detected. With regard to excision of the hip, I

give my adhesion to most of what Mr. H. Marsh has advanced, and state my opinion that this operation is only called for in cases in which, in spite of great care and attention, no progress towards recovery is visible, and the general condition of the patient is steadily deteriorating. In most others, I believe, a cure by natural processes can be obtained by means of immobility, the relief of tension by subcutaneous puncture of the joint, as alluded to by Mr. Teale, and by free incisions into suppurating cavities when such exist, with or without the removal of dead bone. I may add that the surgeon ought to place unlimited confidence in Nature's power for the cure of joint disease, when well assisted by art, in the way I have suggested. How far the presence of visceral disease should induce the surgeon to interfere, is a question I would put to the surgeons present to find an answer.

Mr. Christopher Heath, London : I regard excision as required in incurable cases, and those in which lardaceous disease is present, but protest against early excision in cases in which general and local treatment are available. I would recall attention to Professor Redfern's remarks, and point out that repair takes place by replacement of the cartilage by fibrous tissue and bone, and that the museums show how common osseous ankylosis is. Excision in private practice is almost unknown, and is not required, because of the good hygienic surroundings.

Mr. C. Macnamara, London: With reference to the remarks that have been made by Professor Ollier and Mr. Bryant, I would briefly call attention to the circumstances of two cases now in the Westminster Hospital: one of these patients is a lad fourteen years of age ; in August, 1880, he was brought into my ward suffering from symptoms of what is usually described as acute periostitis. I found, as is the case in most instances of the kind, that the inflammation had extended from the soft-growing tissues at the junction of the shaft and epiphysis of the bone to the periosteum, and probably also to the medulla. On cutting down upon the head of the bone the epiphysis was separated from the diaphysis. Subsequently—that is, in about six weeks from the commencement of his illness—as the patient was evidently sinking from septo-pyæmia, I removed the shaft of his tibia, leaving the upper and lower epiphyses and the periosteum, which, though thickened, could be easily separated from the diseased shaft of the bone. A new tibia has formed from this periosteum, so that the patient has now a useful leg and a perfect knee and ankle-joint. A section of this boy's tibia is to be seen in the Museum of the Congress, No. 19, and it demonstrates the fact that acute inflammation of the epiphysis is apt to involve not only the periosteum but also to cause osteomyelitis of the bone ; it was from the absorption of the putrid matter in the shaft of the tibia that septo-pyæmia was induced, which so nearly killed my patient. In the other case, which also commenced in acute epiphysitis of the upper extremity, of the right tibia, the disease had existed for three months before I saw the little patient. There was then a thick case of new bone, formed from the periosteum, and surrounding the dead shaft of the tibia. I cut down on this dead bone and found the shaft of the tibia had separated from both the upper and lower epiphysis; it was removed, care being taken to separate it from the surrounding soft tissues. In this way I hoped to have left the periosteum, from which a new bone would have been produced, as in the above case; no new bone, however, at the end of six months had been produced because there was no healthy periosteum left in the leg from which it could be formed. We see from this specimen of the bone, recovered from this patient's leg, that the tibia is surrounded with a

case of new bone (periosteal) very different from that of the other specimen. After six months no vestige of osseous tissues having appeared in the patient's leg to replace that which I had taken away, and as the limb was perfectly useless, I determined to endeavour to form a new tibia. I therefore took perfectly fresh, very small pieces of bone and periosteum from the foot of a patient's limb I had amputated, and I placed these pieces of bone and periosteum in a groove made in this little girl's leg in the situation of her tibia. The proceeding was conducted on Listerian principles, and no suppuration occurred. From these little bits of bone and periosteum introduced into this child's leg, new osseous tissue has formed. A narrow ridge of bone can be felt along the course of the osseous tissues which I planted in her leg. We shall, of course, watch with great interest the further progress of this case. The wound has entirely healed, and, as I said before, where no bone whatever existed six weeks ago, now a narrow band of osseous tissue has been produced, and those who have watched the case with me have no doubt that this new bone has formed from that which I had planted in the patient's leg, and which we must expect will take some months to grow to any considerable size. With regard to excisions of the hip, or in fact of any other part of the body, no one questions the ease with which these operations can be performed, and that joints having been removed a fairly useful limb may result. There is no great risk either in operations of this kind, provided the patient be young. From the age of twenty years and upwards, in spite of antiseptics, the resections of large joints are dangerous to life ; and I am convinced that among young persons by far the majority of joint diseases may be cured in their early stages without resection. This is true even of those cases which commence in tuberculous inflammation of the bone, and much more so in those instances of disease referred to by Mr. Teale, in which the joint affection commences in synovitis. In this latter class of cases I agree with Mr. Teale in the advisability of relieving the tension of the joint either by the method he advocates, or by means of the aspirator ; but however the fluid is removed, I think it is necessary immediately after removing it to encase the joint in cotton wool, and surround the whole with an elastic bandage, so as to control the circulation in the foot, and prevent the reaccumulation of fluid in the articulation. Resection of a joint is a most valuable means of treatment, but in my opinion should never be resorted to until all other means have been persistently tried to cure the disease under which our patient is labouring. Surgery can never define exactly how long we are to continue treatment of this kind, but any surgeon of experience knows perfectly well when, if the patient were the child of a relation or friend of his own, he would be able without hesitation to say that resection of the joint was necessary.